IPC910H Series

Embedded System

User's Manual

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Safety Precautions

Before getting started, please read the following important safety precautions.

1. The **IPC910H Series** does not come equipped with an operating system. An operating system must be loaded first before installing any software into the computer.
2. Be sure to ground yourself to prevent static charge when installing the internal components. Use a grounding wrist strap and place all electronic components in any static-shielded devices. Most electronic components are sensitive to static electrical charge.
3. Disconnect the power cord from the **IPC910H Series** before making any installation. Be sure both the system and the external devices are turned OFF. Sudden surge of power could ruin sensitive components. Make sure the **IPC910H Series** is properly grounded.
4. Make sure the voltage of the power source is correct before connecting the equipment to the power outlet.
5. Turn OFF the system power before cleaning. Clean the system using a cloth only. Do not spray any liquid cleaner directly onto the screen.
6. Do not leave this equipment in an uncontrolled environment where the storage temperature is below -20℃ or above 60℃. It may damage the equipment.
7. Do not open the system's back cover. If opening the cover for maintenance is a must, only a trained technician is allowed to do so. Integrated circuits on computer boards are sensitive to static electricity. To avoid damaging chips from electrostatic discharge, observe the following precautions:
   - Before handling a board or integrated circuit, touch an unpainted portion of the system unit chassis for a few seconds. This will help to discharge any static electricity on your body.
   - When handling boards and components, wear a wrist-grounding strap, available from most electronic component stores.

Classification

1. Degree of production against electric shock: not classified
2. Degree of protection against the ingress of water: IPX0
3. Equipment not suitable for use in the presence of a flammable anesthetic mixture with air or with oxygen or nitrous oxide.
4. Mode of operation: Continuous
5. Type of protection against electric shock: Class I equipment

General Cleaning Tips

You may need the following precautions before you begin to clean the computer. When you clean any single part or component for the computer, please read and understand the details below fully.

When you need to clean the device, please rub it with a piece of dry cloth.

1. Be cautious of the tiny removable components when you use a vacuum cleaner to absorb the dirt on the floor.
2. Turn the system off before you start to clean up the component or computer.
3. Never drop the components inside the computer or get circuit board damp or wet.
4. Be cautious of all kinds of cleaning solvents or chemicals when you use it for the sake of cleaning. Some individuals may be allergic to the ingredients.
5. Try not to put any food, drink or cigarette around the computer.

Cleaning Tools:

Although many companies have created products to help improve the process of cleaning your computer and peripherals users can also use household items to clean their computers and peripherals. Below is a listing of items you may need or want to use while cleaning your computer or computer peripherals.

Keep in mind that some components in your computer may only be able to be cleaned using a product designed for cleaning that component, if this is the case it will be mentioned in the cleaning.

- Cloth: A piece of cloth is the best tool to use when rubbing up

a component. Although paper towels or tissues can be used on most hardware as well, we still recommend you to rub it with a piece of cloth.

- Water or rubbing alcohol: You may moisten a piece of cloth a bit with some water or rubbing alcohol and rub it on the computer. Unknown solvents may be harmful to the plastics parts.
- Vacuum cleaner: Absorb the dust, dirt, hair, cigarette particles, and other particles out of a computer can be one of the best methods of cleaning a computer. Over time these items can restrict the airflow in a computer and cause circuitry to corrode.
- Cotton swabs: Cotton swaps moistened with rubbing alcohol or water are excellent tools for wiping hard to reach areas in your keyboard, mouse, and other locations.
- Foam swabs: Whenever possible it is better to use lint free swabs such as foam swabs.

Note *It is strongly recommended that you should shut down the system before you start to clean any single components.*

Please follow the steps below:

1. Close all application programs
2. Close operating software
3. Turn off power switch
4. Remove all device
5. Pull out power cable

Scrap Computer Recycling

If the computer equipments need the maintenance or are beyond repair, we strongly recommended that you should inform your AXIOMTEK distributor as soon as possible for the suitable solution. For the computers that are no longer useful or no longer working well, please contact your AXIOMTEK distributor for recycling and we will make the proper arrangement.

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CHAPTER 1
INTRODUCTION

This chapter contains general information and a detailed specification of the **IPC910H Series**. Chapter 1 includes the following sections:

- **General Description**
- **System Specification**
- **Dimensions**
- **I/O Outlets**
- **Package List**

1.1 General Description

The **IPC910H Series** is an embedded system that can support Socket M for Intel® Core™ 2 Duo/ Core™ Duo or Celeron® M processors. The **IPC910H Series** supports Windows® 2000, Windows® XP, and Windows® XP embedded, suitable for the most endurable operation.

- **Reliable and Stable Design**
  The **IPC910H Series** adopts an anti-vibration hard-drive bay, which makes it especially suitable for vibration environments, best for industrial automation, digital signage and gaming application.

- **Embedded O.S. Supported**
  The **IPC910H Series** not only supports Windows® 2000, Windows® XP, but also supports embedded OS, such as Windows® XP embedded. For storage device, the **IPC910H Series** supports one 2.5" HDD driver bay and one onboard CompactFlash™ socket.

1.2 System Specifications

1.2.1 Main CPU Board

- **CPU**
  - Socket type Intel® Core™ 2 Duo/ Core™ Duo or Celeron® M processors
- **System Chipset**
  - Intel® 945GME chipset
- **BIOS**
  - Phoenix-Award BIOS, 4Mbit with RPL/PXE LAN Boot ROM, SmartView and Customer CMOS Backup.
- **System Memory**
  - Two 200-pin DDR2 533/667 MHz SODIMM sockets, with maximum up to 4GB
- **Features**
  - Supports Dual 1000/100/10 LAN ports
  - Supports six USB 2.0/VGA
  - Supports three RS232 and one RS232/422/485 DB9 connectors
  - Supports two PCIe or one PCI & one PICe expansion slots
  - DC to DC power supply support 18V to 28V

1.2.2 I/O System

- **I/O Interface -- Rear**
  - ATX power on/off switch
  - One 2-pin connector output for remote power on/off switch
  - 18VDC to 28VDC with phoenix power plug or External 90W AC Adapter
  - One PS/2 keyboard/mouse connector
  - One VGA connector
  - Two USB 2.0 ports
  - Two G.E. LAN ports
  - One DB-9 as COM1 for RS232/422/485

Note *The default setting of COM1 is RS232. The RS422/485 mode of COM1 can be supported by adjusting the jumper inside the system.*

  - Three RS-232 COM Ports as COM2, COM3, COM4
- **I/O Interface -- Front**
  - Four USB 2.0 ports
  - HDD access/power LEDs
- **Expansion Slot**
  - Two PCIe slots (one PCIe x1 & one PCIe x4; or two PCIe x1) when backplane HAB100 installed
  - One PCI & one PCIe slots (one PCI & one PCIe x4) when backplane HAB103 installed

NOTE *The safe value of 12V voltage for one expansion card is between 0.6A ~ 0.8A; the maximum value for two expansion cards can't exceed 2A.*

1.2.3 System Specification

- **Drive Capacity**
  - Supports one 2.5" HDD driver bay; one onboard

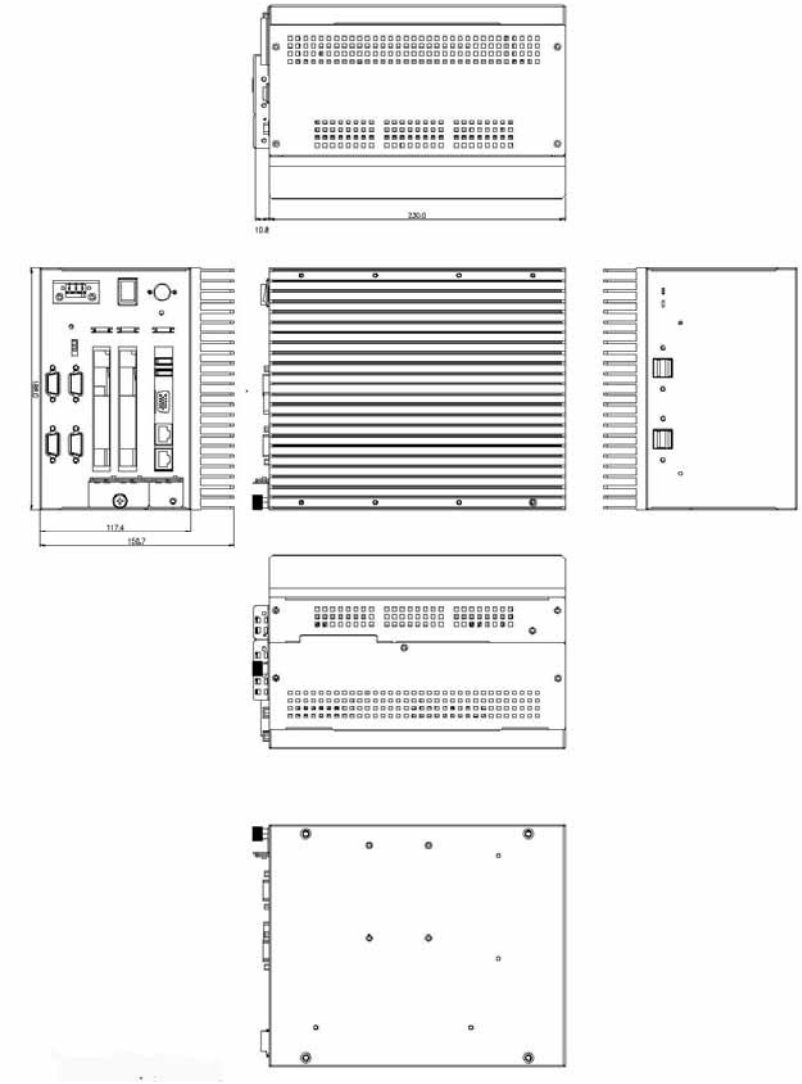
CompactFlash™ Socket

- **Power Input**
  - 18VDC to 28VDC with phoenix power plug
  - External 90W AC Adapter
  - Power Input – 90VAC to 264VAC, 6.32A 47/63HZ
  - Power Output – 19VDC
- **Operation Temperature**
  - Ambient with air flow: -5℃ ~ 45℃
- **Storage Temperature**
  - -20℃ ~ 80℃
- **Humidity**
  - 10% ~ 90% (Non-condensing)
- **Dimensions**
  - 188mm (W) x 241.2mm (D) x 150.4mm (H)

NOTE *All specifications and images are subject to change without notice.*

1.3 Dimensions

The following diagrams show you dimensions and outlines of the **IPC910H Series**.

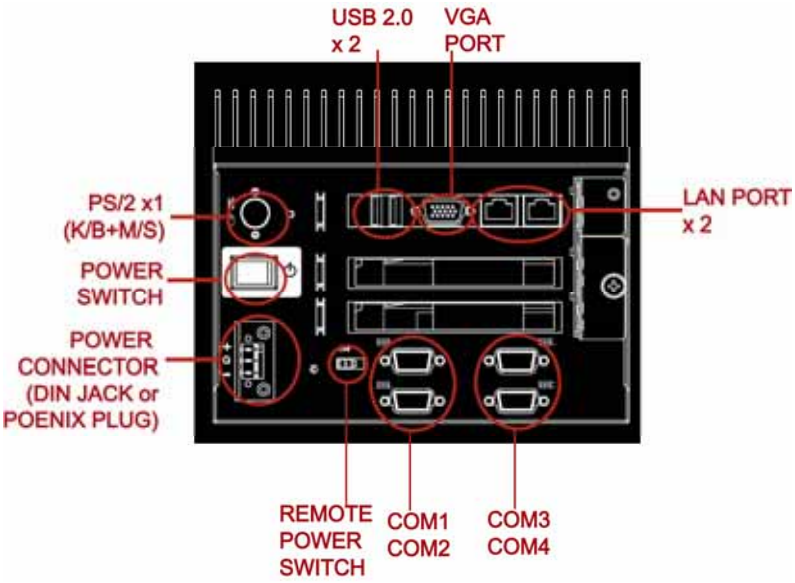


1.4 I/O Outlets

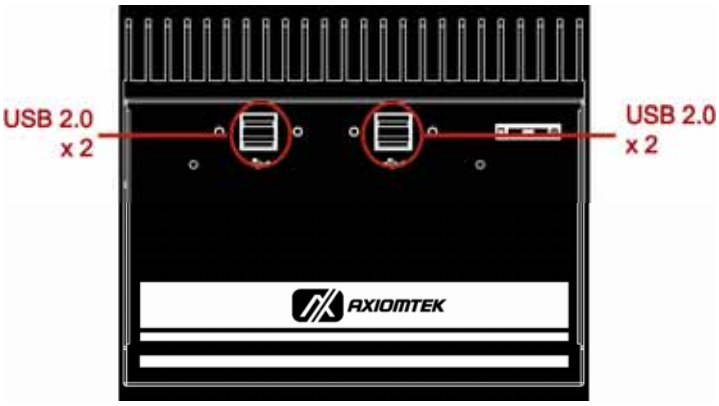
The following figures show you I/O outlets on front and rear panels of the **IPC910H Series**.

VGA

- **Rear Panel**

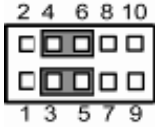
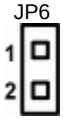


- **Front Panel**

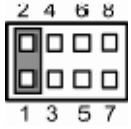
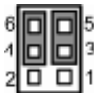
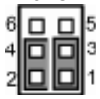
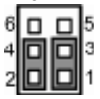
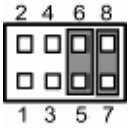
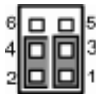
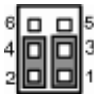


1.5 Jumper Settings

The IPC910H has a number of jumpers inside the chassis that allow you to configure your system to suit your application. The table below lists the functions of the various jumpers.

Jumper	Description	Jumper Setting	Description	Jumper Setting
COM1 DCD & RI Voltage Selection	Normal (Default)	JP1 	5V	JP1 
	12V	JP1 	DCD/5V RI/12V	JP1
CMOS	Normal (Default)	JP7 	Clear CMOS	JP7
CF Master/Slave	Master (Default)	JP6 	Slave	JP6 

COM1 RS232/422/485 Jumper Setting

Jumper	Description	Jumper Setting	Description	Jumper Setting
COM1	RS-232 (Default)	JP2 	JP3	JP4 
	RS-422	JP2	JP3 	JP4 
	RS-485	JP2 	JP3 	JP4 

Backplane Jumper Setting

Use this jumper to select PCIe x1 or PCIe x 4 by the following setting.

Jumper	Description	Jumper Setting	Description	Jumper Setting
PCI Slot Function Select	1 PCIe x 1		1 PCIe x 4	

1.6 Packing List

The package bundled with your **IPC910H Series** should contain the following items:

- IPC910H Series Unit x 1
- DIN 6P-6P PS/2 KB + MOUSE (RC) x 1
- TB HD-515 3P (F) 180D P=5.08 GREEN RC x 1 (for IPC910H-P)
- External Power Switch Cable
- 19V 90W Adapter (for IPC910H-D)
- Driver CD
- Quick Manual
- Wall Mount Bracket x 2
- TMS M4*6 (RC) x 12
- Power cord USA 2pin YP11/YC13 L = 1830mm x 1 (for IPC910H-D)

If you can not find this package or any items are missing, please contact AXIOMTEK distributors immediately.

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CHAPTER 2
HARDWARE INSTALLATION

The **IPC910H Series** are convenient for your various hardware configurations, such as CPU (Central Processing Unit), Memory Module, HDD (Hard Disk Drive) and PCIe card. The chapter 2 will show you how to install the hardware. It includes:

2.1 Installing the Processor

The Intel® Pentium® M Processor is available as a boxed processor for laptop computers in the micro-FCPGA form factor. Intel recommends the processor should be installed by a computer professional since this electronic device may cause serious damage to the installer, system and processor if installed improperly.

Important Notes Before attempting to install a new processor, carefully review the documentation that came with your system and make sure that you will not be voiding your warranty by opening the computer or replacing your processor.

Instructions:

1. Make sure that your system can accommodate the Intel® Pentium® M Processor that you want to install. Check for motherboard, BIOS, and thermal compatibility by using the manufacturer's documentation for the laptop computer, or by contacting the vendor if necessary. This processor should only be installed in systems supporting the Intel® Pentium® M Processor.

   Important Notes Do not use an Intel® Pentium® M Processor in a desktop system and do not use a desktop processor in an Intel® Pentium® M Processor notebook. Since these processors have different electrical specifications, damage to the processor and system can occur.
2. Obtain access to your processor socket as described in the documentation for your system.

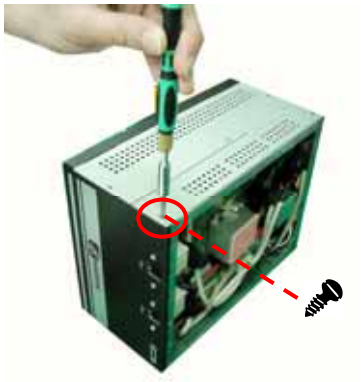
3. If the cooling solution prevents you from accessing the processor socket, you may need to remove it. Instructions on how to remove your cooling solution should be provided in the documentation that came with the system.
4. To un-install the current processor, use a screwdriver to disengage (open) the socket actuator, as shown in Figure 1 below. (The most commonly used sockets are Molex* or FoxConn* sockets, so they are used in the illustrations below.) The socket actuator should open after only a half turn or so, and you should then be able to remove the processor with your fingers.

Procedure of Installation:

Step 1 Turn off the system.

Step 2 Disconnect the power connector.

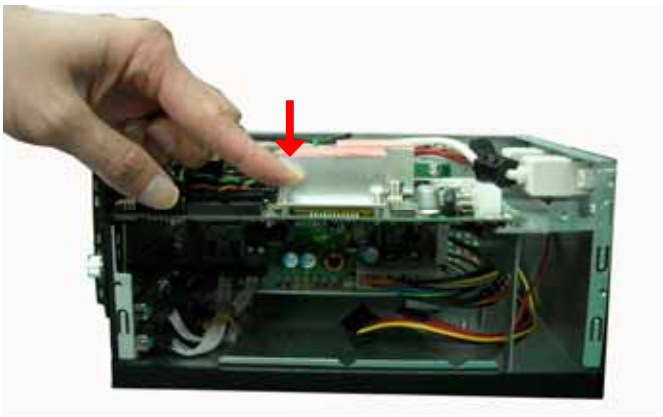
Step 3 Loosen screws to remove the top and side covers from the chassis.



Step 4 After opening the top and side covers, you can locate the CPU socket and heatsink as marked.

Step 5 Align pins of the CPU with pin holes of the socket. Be careful of the CPU's orientation that you need to align the arrow mark on the CPU with the arrow key on the socket. Place the CPU into the socket, and use a screwdriver to lock it onto the socket.

Step 6 Place the CPU Heatsink on the CPU, and lock it by pushing down the fixing buttons.



Step 7 Close the side and top covers back to the chassis, and fasten all screws.

2.2 Installing the Memory Module

Step 1 Turn off the system.

Step 2 Disconnect the power connector.

Step 3 Loosen screws to remove the side cover from the chassis.

Step 4 Please follow steps below to install the memory module:

1. Align the memory module with the socket that notches of memory module must match the socket keys for a correct installation.

2. Install the memory module into the socket and push it firmly down until it is fully seated. The socket latches are clipped on to the edges of the SO-DIMM.

Step 5 Put back the side cover to the chassis and fasten all screws.

2.3 Installing the Hard Disk Drive

The **IPC910H Series** offers a convenient drive bay module for users to install HDD. The system offers users one 2.5" Hard Disk Drive for installation. Please follow the steps:

Step 1 Turn off the system.

Step 2 Disconnect the power connector.

Step 3 Loosen screws to remove the side cover from the chassis.

Step 4 Open the side cover and locate the Hard Disk Drive from the side.

Step 5 Use assembly parts to fix HDD with the bracket.

Step 6 Install and fix the HDD through the bottom, next, plug the power cable in HDD.

Step 7 Close the side cover back to the chassis and fasten all screws.

2.4 Installing the PCIe Card (when Backplane HAB100 installed)

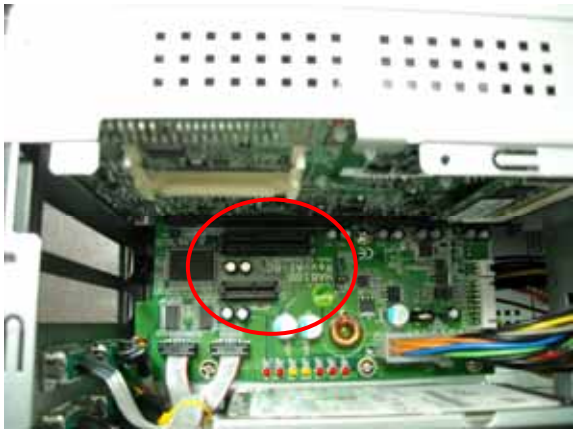
Notes The system provides two PCIe slots when backplane HAB100 is installed. You can install one PCIe x1 and one PCIe x4; or two PCIe x1.

Step 1 Turn off the system.

Step 2 Disconnect the power connector.

Step 3 Loosen screws to remove the side cover from the chassis. Removing the PCI bracket by releasing the button as marked.

Step 4 Locate the PCIe slots from the side.



Step 5 Align the PCIe card with the slot, and press the card into the slot until it is firmly seated.

Step 6 One PCIe x1 and one PCIe x4 can be installed; or, two PCIe x1.

Step 7 Close the side cover back to the chassis and fasten all screws.

2.5 Installing the PCIe Card (when Backplane HAB103 installed)

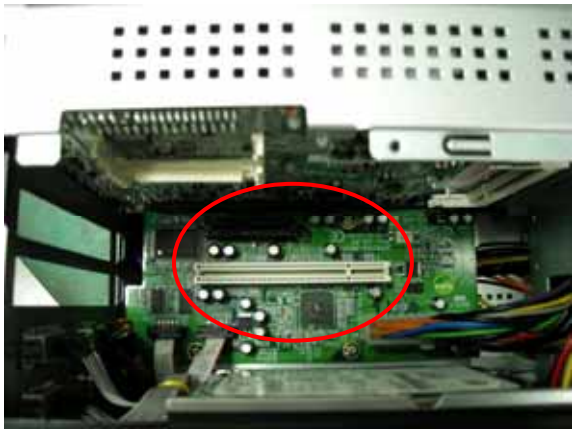
Notes The system provides PCI & PCIe slots when backplane HAB103 is installed. You can install one PCI and one PCIe x4.

Step 1 Turn off the system.

Step 2 Disconnect the power connector.

Step 3 Loosen screws to remove the side cover from the chassis. Removing the PCI bracket by releasing the button as marked.

Step 4 Locate the PCIe slots from the side.



Step 5 Align the PCIe card with the slot, and press the card into the slot until it is firmly seated. One PCI and one PCIe x4 can be installed.

Step 6 Put brackets, side cover back to the chassis, fasten all buttons and screws.

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CHAPTER 3
PHOENIX-AWARD BIOS UTILITY

The Phoenix-Award BIOS provides users with a built-in Setup program to modify basic system configuration. All configured parameters are stored in a battery-backed-up RAM (CMOS RAM) to save the Setup information whenever the power is turned off.

3.1 Entering Setup

There are two ways to enter the Setup program. You may either turn ON the computer and press <Del> immediately, or press the <Del> and/or <Ctrl>, <Alt>, and <Esc> keys simultaneously when the following message appears at the bottom of the screen during POST (Power on Self Test).

TO ENTER SETUP PRESS DEL KEY

If the message disappears before you respond and you still want to enter Setup, please restart the system to try it again. Turning the system power OFF and ON, pressing the "RESET" button on the system case or simultaneously pressing <Ctrl>, <Alt>, and <Del> keys can restart the system. If you do not press keys at the right time and the system doesn't boot, an error message will pop out to prompt you the following information:

PRESS <F1> TO CONTINUE, <CTRL-ALT-ESC> OR <DEL> TO ENTER SETUP

3.2 Control Keys

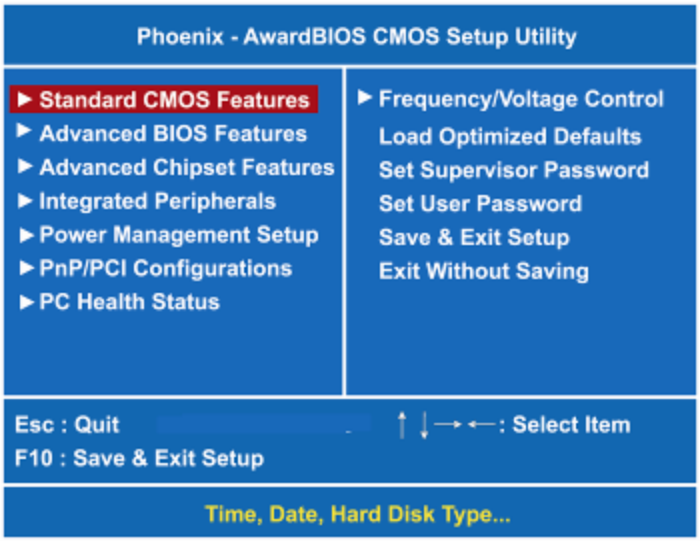
Up arrow	Move cursor to the previous item
Down arrow	Move cursor to the next item
Left arrow	Move cursor to the item on the left hand
Right arrow	Move to the item in the right hand
Esc key	Main Menu -- Quit and delete changes into CMOS Status Page Setup Menu and Option Page Setup Menu -- Exit current page and return to Main Menu
PgUp/"+" key	Increase the numeric value or make changes
PgDn/"–" key	Decrease the numeric value or make changes
F1 key	General help, only for Status Page Setup Menu and Option Page Setup Menu
(Shift) F2 key	Change color from total 16 colors. F2 to select color forward, (Shift) F2 to select color backward
F3 key	Reserved
F4 key	Reserved
F5 key	Restore the previous CMOS value from CMOS, only for Option Page Setup Menu
F6 key	Load the default CMOS value from BIOS default table, only for Option Page Setup Menu
F7 key	Load the Setup default, only for Option Page Setup Menu
F8 key	Reserved
F9 key	Reserved
F10 key	Save all the CMOS changes, only for Main Menu

3.3 Getting Help

- **Main Menu**
  The online description of the highlighted setup function is displayed at the bottom of the screen.
- **Status Page Setup Menu/Option Page Setup Menu**
  Press <F1> to pop out a small Help window that provides the description of using appropriate keys and possible selections for highlighted items. Press <F1> or <Esc> to exit the Help Window.

3.4 The Main Menu

Once you enter the Award BIOS CMOS Setup Utility, the Main Menu appears on the screen. In the Main Menu, there are several Setup functions and a couple of Exit options for your selection. Use arrow keys to select the Setup Page you intend to configure then press <Enter> to accept or enter its sub-menu.

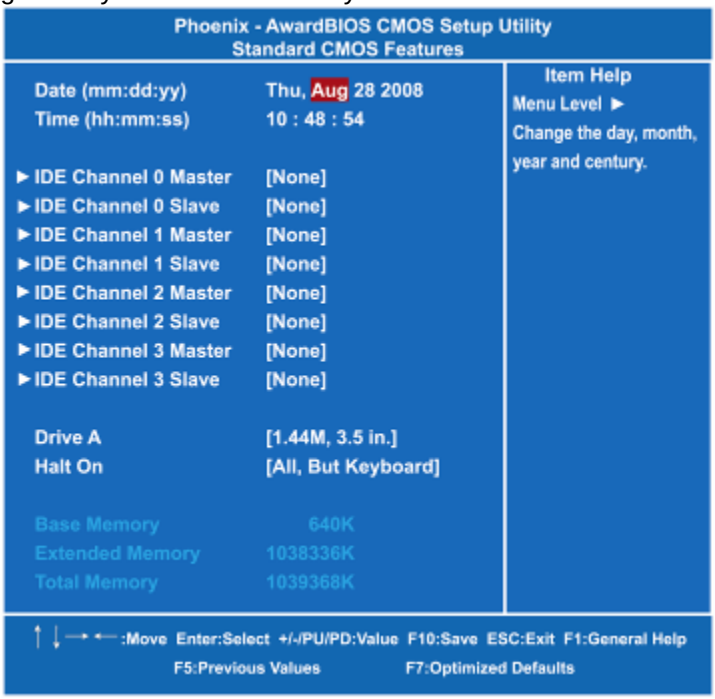


NOTE *If your computer can not boot after making and saving system changes with Setup, the Award BIOS will reset your system to the CMOS default settings via its built-in override feature.*

It is strongly recommended that you should avoid changing the chipset's defaults. Both Award and your system manufacturer have carefully set up these defaults that provide the best performance and reliability.

3.5 Standard CMOS Setup Menu

The Standard CMOS Setup Menu displays basic information about your system. Use arrow keys to highlight each item, and use <PgUp> or <PgDn> key to select the value you want in each item.


Phoenix - AwardBIOS CMOS Setup Utility
Standard CMOS Features
Item Help
Menu Level ►
Change the day, month, year and century.
Date (mm:dd:yy) Thu, Aug 28 2008
Time (hh:mm:ss) 10 : 48 : 54
► IDE Channel 0 Master [None]
► IDE Channel 0 Slave [None]
► IDE Channel 1 Master [None]
► IDE Channel 1 Slave [None]
► IDE Channel 2 Master [None]
► IDE Channel 2 Slave [None]
► IDE Channel 3 Master [None]
► IDE Channel 3 Slave [None]
Drive A [1.44M, 3.5 in.]
Halt On [All, But Keyboard]
Base Memory 640K
Extended Memory 1038336K
Total Memory 1039368K
↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5:Previous Values F7:Optimized Defaults

- **Date**
  The date format is <day>, <date> <month> <year>. Press <F3> to show the calendar.

day	It is determined by the BIOS and read only, from Sunday to Saturday.
month	It can be keyed with the numerical/ function key, from 1 to 31.
Date	It is from January to December.
year	It shows the current year of BIOS.

- **Time**
  This item shows current time of your system with the format <hour> <minute> <second>. The time is calculated based on the 24-hour military-time clock. For example, 1 p.m. is 13:00:00.

- **IDE Channel 0/1/2/3 Master/IDE Channel 0/1/2/3 Slave**
  These items identify the types of each IDE channel installed in the computer. There are 45 predefined types (Type 1 to Type 45) and 2 user's definable types (Type User) for Enhanced IDE BIOS. Press <PgUp>/<+> or <PgDn>/<–> to select a numbered hard disk type, or directly type the number and press <Enter>. Please be noted your drive's specifications must match the drive table. The hard disk will not work properly if you enter improper information. If your hard disk drive type does not match or is not listed, you can use Type User to manually define your own drive type.
  If selecting Type User, you will be asked to enter related information in the following items. Directly key in the information and press <Enter>. This information should be provided in the documentation from your hard disk vendor or the system manufacturer.
  If the HDD interface controller supports ESDI, select "Type 1".
  If the HDD interface controller supports SCSI, select "None".
  If the HDD interface controller supports CD-ROM, select "None".

CYLS.	number of cylinders	**LANDZONE**	landing zone
HEADS	number of heads	**SECTORS**	number of sectors
PRECOMP	write precom	**MODE**	HDD access mode

  If there is no hard disk drive installed, select NONE and press <Enter>.

- **Drive A**
  Select the type of floppy drive installed in your system, and the default is *"None"*.

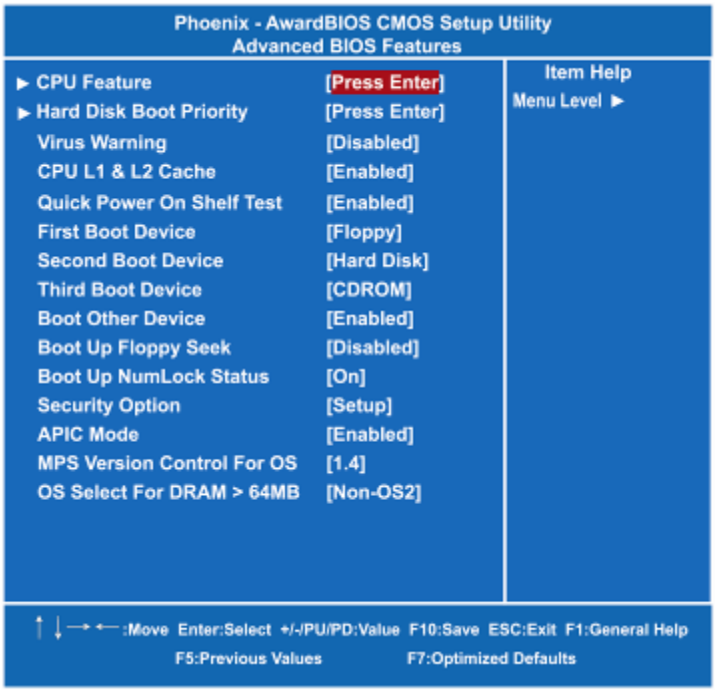
- **Halt On**
  This item determines whether the system will halt or not, if an error is detected while powering up.

No errors	The system booting will halt on any errors detected. (default)
All errors	Whenever BIOS detects a non-fatal error, the system will stop and you will be prompted.
All, But Keyboard	The system booting will not stop for a keyboard error; it will stop for other errors.
All, But Diskette	The system booting will not stop for a disk error; it will stop for other errors.
All, But Disk/Key	The system booting will not stop for a keyboard or disk error; it will stop for other errors.

Press <Esc> to return to the Main Menu page.

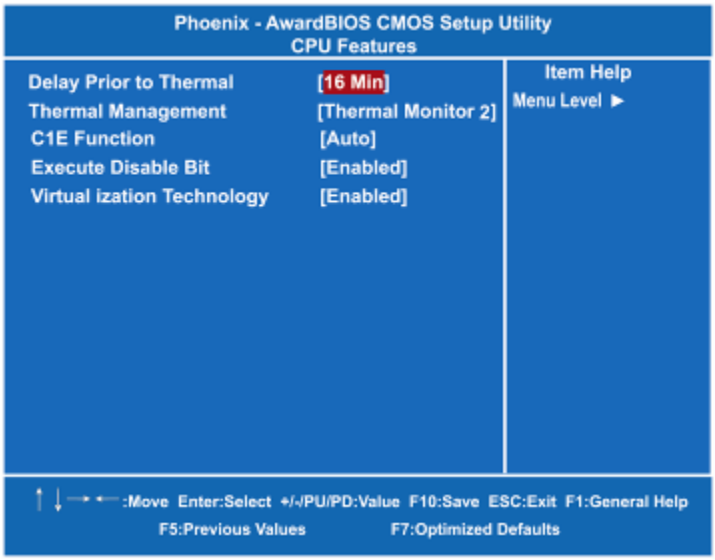
3.6 Advanced BIOS Features

This section allows you to configure and improve your system, to set up some system features according to your preference.


Phoenix - AwardBIOS CMOS Setup Utility
Advanced BIOS Features
▶ CPU Feature [Press Enter]
▶ Hard Disk Boot Priority [Press Enter]
Virus Warning [Disabled]
CPU L1 & L2 Cache [Enabled]
Quick Power On Shelf Test [Enabled]
First Boot Device [Floppy]
Second Boot Device [Hard Disk]
Third Boot Device [CDROM]
Boot Other Device [Enabled]
Boot Up Floppy Seek [Disabled]
Boot Up NumLock Status [On]
Security Option [Setup]
APIC Mode [Enabled]
MPS Version Control For OS [1.4]
OS Select For DRAM > 64MB [Non-OS2]
Item Help
Menu Level ▶
↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5:Previous Values F7:Optimized Defaults

- **CPU Feature**

  Scroll to this item and press <Enter> to view the CPU Feature sub menu.

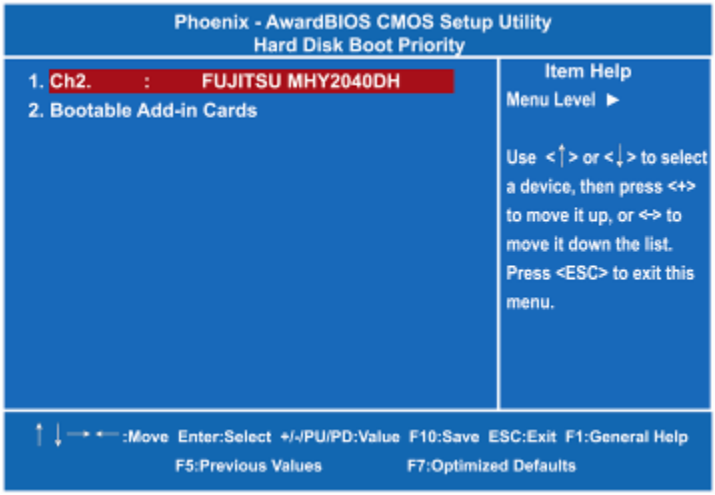


  - **Delay prior to Thermal**
    This filed is used to select the time that would force the CPU to a 50% duty cycle when it exceeds its maximum operating temperature therefore protecting the CPU and the system board from overheating to ensure a safe computing environment.
  - **Thermal Management**
    Thermal Monitor 1 On-die throttling
    Thermal Monitor 2 Ratio and VID transition

Press <Esc> to return to the Advanced BIOS Features page.

- **Hard Disk Boot Priority**

  Scroll to this item and press <Enter> to view the sub menu to decide the disk boot priority.


Phoenix - AwardBIOS CMOS Setup Utility
Hard Disk Boot Priority
1. Ch2. : FUJITSU MHY2040DH
2. Bootable Add-in Cards
Item Help
Menu Level ►
Use <↑> or <↓> to select a device, then press <+> to move it up, or <-> to move it down the list. Press <ESC> to exit this menu.
:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5:Previous Values F7:Optimized Defaults

Press <Esc> to return to the Advanced BIOS Features page.

- **Virus Warning**
  This option flashes on the screen. During and after the system boot up, any attempt to write to the boot sector or partition table of the hard disk drive will halt the system with the following message. You can run an anti-virus program to locate the problem. The default setting is "*Disabled*".

! WARNING !
Disk boot sector is to be modified *Type "Y" to accept write or "N" to abort write* *Award Software, Inc.*

Enabled	It automatically activates while the system boots up and a warning message appears for an attempt to access the boot sector or hard disk partition table.
Disabled	No warning message will appear for attempts to access the boot sector or hard disk partition table.

NOTE *This function is only available with DOS and other operating systems that do not trap INT13.*

- **CPU L1 & L2 Cache**
  These two options speed up memory access. However, it depends on the CPU/chipset design. The default setting is *"Enabled"*. CPUs without built-in internal cache will not provide the "CPU Internal Cache" item on the menu.

Enabled	Enable cache
Disabled	Disable cache

- **Quick Power On Self Test**
  This option speeds up Power on Self Test (POST) after you turn on the system power. If set as Enabled, BIOS will shorten or skip some check items during POST. The default setting is *"Enabled"*.

Enabled	Enable Quick POST
Disabled	Normal POST

- **First/Second/Third Boot Device**
  These items let you select the 1st, 2nd, and 3rd devices that the system will search for during its boot-up sequence. The wide range of selection includes Floppy, LS120, ZIP100, HDD0~3, SCSI, and CDROM.

- **Boot Other Device**
  This item allows users to enable or disable the boot device not listed in the First/Second/Third boot devices option above. The default setting is "*Enabled"*.
- **Boot Up Floppy Seek**
  During POST, BIOS will determine the floppy disk drive type, 40 or 80 tracks. The 360Kb type is 40 tracks while 720Kb, 1.2MB and 1.44MB are all 80 tracks. The default value is "*Enabled*".

Enabled	BIOS searches for floppy disk drive to determine if it is 40 or 80 tracks. Please be noted BIOS can not differentiate 720K, 1.2M or 1.44M drive type as they all are 80 tracks.
Disabled	BIOS will not search for the type of floppy disk drive by track number. There will be no warning message displayed if the installed drive is 360K.

- **Boot Up NumLock Status**
  Set the the Num Lock status when the system is powered on. The default value is *"On"*.
- **Security Option**
  This item allows you to limit access to the system and Setup, or just to Setup. The default value is *"Setup"*.

System	If a wrong password is entered at the prompt, the system will not boot, the access to Setup will be denied, either.
Setup	If a wrong password is entered at the prompt, the system will boot, but the access to Setup will be denied.

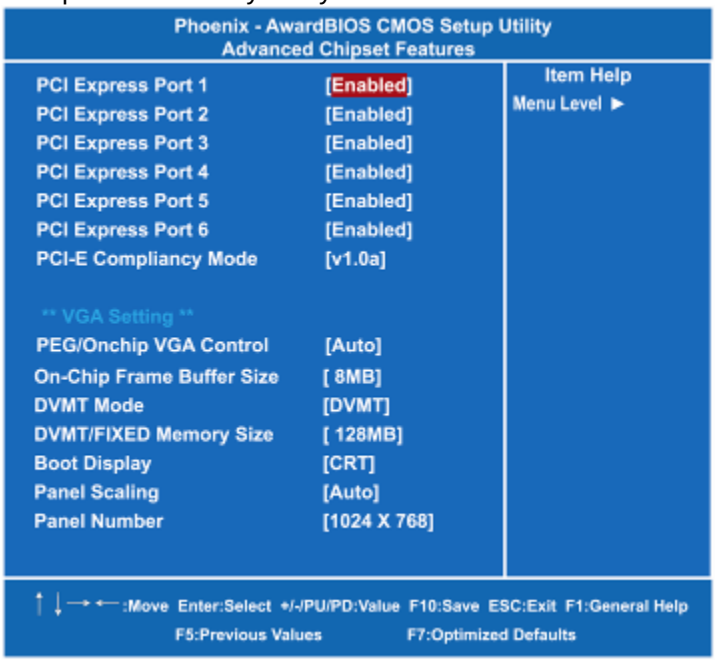
NOTE *To disable the security, select PASSWORD SETTING at Main Menu and then you will be asked to enter a password. Do not type anything, just press <Enter> and it will disable the security. Once the security is disabled, the system will boot and you can enter Setup freely.*

- **APIC Mode**
  Use this item to enable or disable APIC (Advanced Programmable Interrupt Controller) mode that provides symmetric multi-processing (SMP) for systems.
- **MPS Version Control For OS**
  This item specifies the version of the Multiprocessor Specification (MPS). Version 1.4 has extended configuration tables to improve support for multiple PCI bus configurations and provide future expandability.
- **OS Select for DRAM >64MB**
  This item allows you to access the memory over 64MB in OS/2.

Press <Esc> to return to the Main Menu page.

3.7 Advanced Chipset Features

This section contains completely optimized chipset's features on the board that you are strongly recommended to leave all items on this page at their default values unless you are very familiar with the technical specifications of your system hardware.


Phoenix - AwardBIOS CMOS Setup Utility
Advanced Chipset Features
PCI Express Port 1 [Enabled]
PCI Express Port 2 [Enabled]
PCI Express Port 3 [Enabled]
PCI Express Port 4 [Enabled]
PCI Express Port 5 [Enabled]
PCI Express Port 6 [Enabled]
PCI-E Compliancy Mode [v1.0a]
** VGA Setting **
PEG/Onchip VGA Control [Auto]
On-Chip Frame Buffer Size [8MB]
DVMT Mode [DVMT]
DVMT/FIXED Memory Size [128MB]
Boot Display [CRT]
Panel Scaling [Auto]
Panel Number [1024 X 768]
Item Help
Menu Level ►
:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5:Previous Values F7:Optimized Defaults

- **PCI Express Port 1 ~ 6**

  There are several PCI Express Ports for your selection.

- **PCI-E Compliancy Mode**

  This item allows you to set the version of the PCI Express base specifications.

**** VGA Setting ****

- **PEG/Onchip VGA Control**
  This setting allows you to select whether to use the onchip graphics processor or the PCI Express card. When set to [Auto], the BIOS will check if a PCI Express graphics card is installed or not. If a PCI

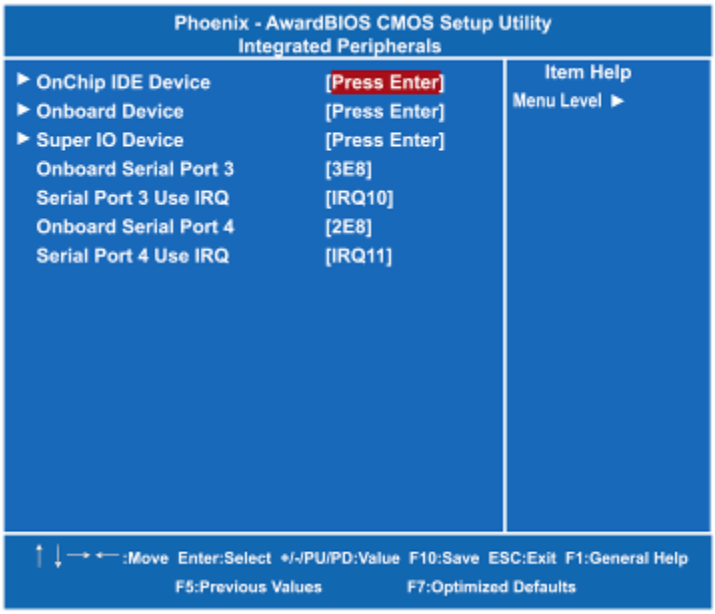
Express graphics card is detected, the board will boot up using that card. Otherwise, it is defaulted to the onchip graphics processor.

- **On-Chip Frame Buffer Size**
  Use this item to set the VGA frame buffer size.
- **DVMT Mode**
  DVMT (Dynamic Video Memory Technology) helps you select the video mode.
- **DVMT/Fixed Memory Size**
  DVMT (Dynamic Video Memory Technology) allows you to select a maximum size of dynamic amount usage of the video memory. The system would configure the video memory dependent on your application.
- **Boot Display**
  This item is to select Display Device that the screen will be shown.
- **Panel Scaling**
  This item shows the setting of panel scaling and operates the scaling function that the panel output can fit the screen resolution connected to the output port.
- **Panel Number**
  This item is to select panel resolution that you want.

Press <Esc> to return to the Main Menu page.

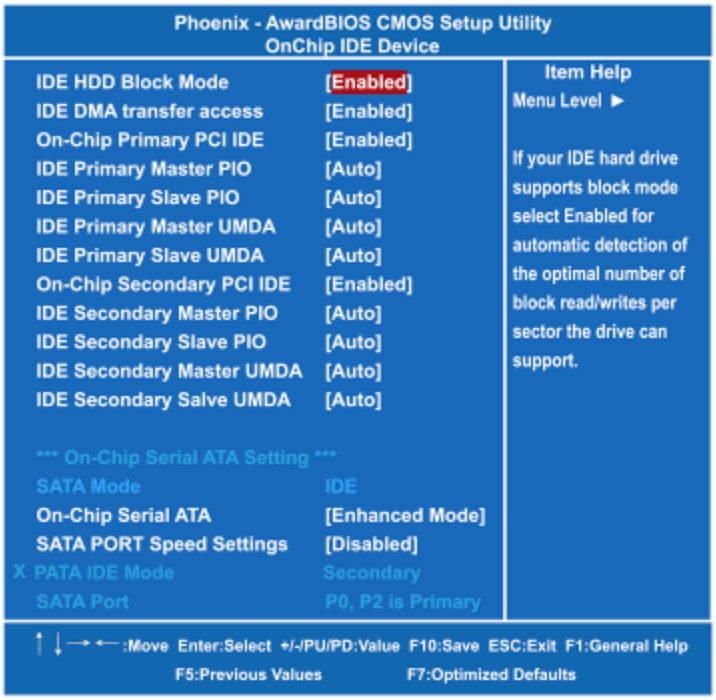
3.8 Integrated Peripherals

This section allows you to configure your SuperIO Device, IDE Function and Onboard Device.


Phoenix - AwardBIOS CMOS Setup Utility
Integrated Peripherals
OnChip IDE Device [Press Enter]
Onboard Device [Press Enter]
Super IO Device [Press Enter]
Onboard Serial Port 3 [3E8]
Serial Port 3 Use IRQ [IRQ10]
Onboard Serial Port 4 [2E8]
Serial Port 4 Use IRQ [IRQ11]
Item Help
Menu Level ►
:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5:Previous Values F7:Optimized Defaults

- **OnChip IDE Device**

  Scroll to this item and press <Enter> to view the sub menu OnChip IDE Device.


Phoenix - AwardBIOS CMOS Setup Utility
OnChip IDE Device
IDE HDD Block Mode [Enabled]
IDE DMA transfer access [Enabled]
On-Chip Primary PCI IDE [Enabled]
IDE Primary Master PIO [Auto]
IDE Primary Slave PIO [Auto]
IDE Primary Master UMDA [Auto]
IDE Primary Slave UMDA [Auto]
On-Chip Secondary PCI IDE [Enabled]
IDE Secondary Master PIO [Auto]
IDE Secondary Slave PIO [Auto]
IDE Secondary Master UMDA [Auto]
IDE Secondary Salve UMDA [Auto]
*** On-Chip Serial ATA Setting ***
SATA Mode IDE
On-Chip Serial ATA [Enhanced Mode]
SATA PORT Speed Settings [Disabled]
PATA IDE Mode Secondary
SATA Port P0, P2 is Primary
Item Help
Menu Level ►
If your IDE hard drive supports block mode select Enabled for automatic detection of the optimal number of block read/writes per sector the drive can support.
:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5:Previous Values F7:Optimized Defaults

  - **IDE HDD Block Mode**
    Block mode is also called block transfer, multiple commands, or multiple sectors read/write. If your IDE hard drive supports block mode (most new drives do), select Enabled for automatic detection of the optimal number of block read/writes per sector the drive can support.
  - **IDE DMA transfer access**
    Automatic data transfer between system memory and IDE device with minimum CPU intervention. This improves data throughput and frees CPU to perform other tasks.
  - **On-Chip Primary/Secondary PCI IDE**
    The integrated peripheral controller contains an IDE interface with support for two IDE channels. Select Enabled to activate each channel separately. The default value is *"Enabled"*.

    NOTE *Choosing Disabled for these options will*

automatically remove the IDE Primary Master/ Slave PIO and/or IDE Secondary Master/Slave PIO items on the menu.

- **IDE Primary/Secondary Master/Slave PIO**
  The four IDE PIO (Programmed Input/Output) fields let you set a PIO mode (0-4) for each of the four IDE devices that the onboard IDE interface supports. Modes 0 to 4 provide successively increased performance. In Auto mode, the system automatically determines the best mode for each device.
- **IDE Primary/Secondary Master/Slave UDMA**
  Select the mode of operation for the IDE drive. Ultra DMA-33/66/100/133 implementation is possible only if your IDE hard drive supports it and the operating environment includes a DMA driver. If your hard drive and system software both support Ultra DMA-33/66/100/133, select Auto to enable UDMA mode by BIOS.

**** On-Chip Serial ATA Setting ****

- **SATA Mode**
  There are these options for you to set up SATA mode: IDE, RAID or AHCI.
- **On-Chip Serial ATA**

  Use this item to enable or disable the built-in on-chip serial ATA.
- **SATA PORT Speed Settings**

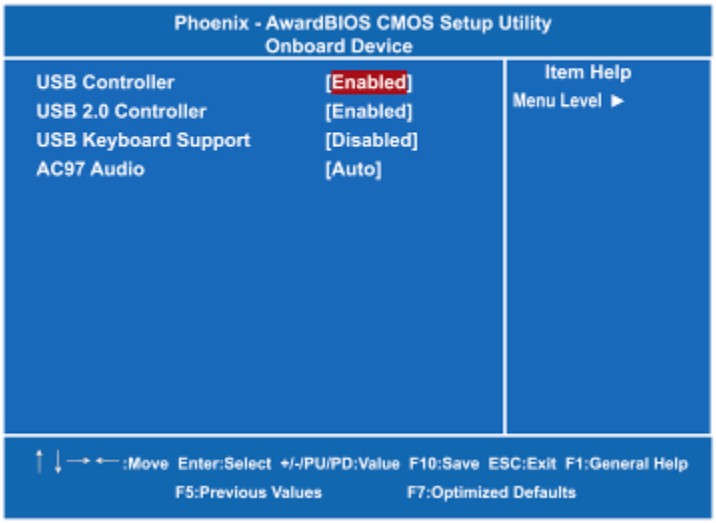
  Use this item to select SATA I or SATA II device support forcedly.
- **PATA IDE Mode**

  Use this item to set the PATA IDE mode. When set to Primary, P1 and P3 are Secondary; on the other hand, when set to Secondary, P0 and P2 are Primary.
- **SATA Port**
  If the "PATA IDE Mode" is Primary, " P1, P3 is Secondary" will be shown to mean SATA 2 and SATA 4 are Secondary. If the "PATA IDE Mode " is Secondary, " P0, P2 is Primary " will be shown to mean SATA 1 and SATA 3 are Primary.

Press <Esc> to return to the Integrated Peripherals page.

- **Onboard Device**

  Scroll to this item and press <Enter> to view the sub menu Onboard Device.

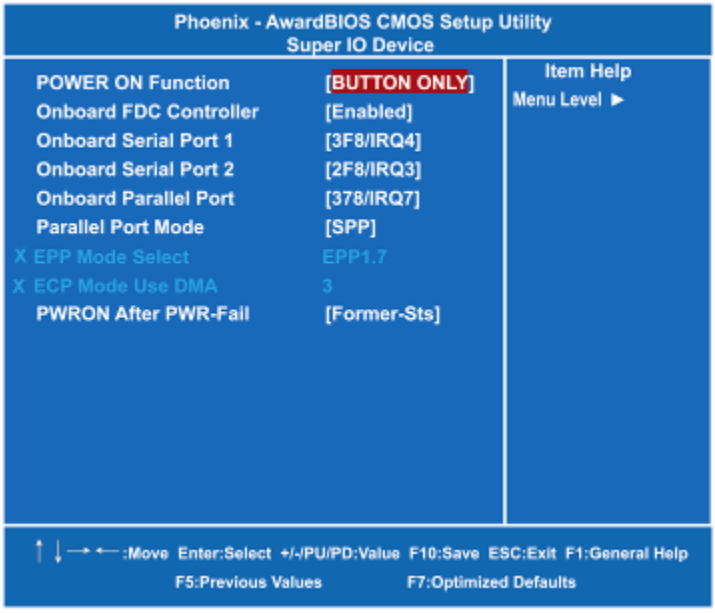


  - **USB Controller**
    Enable this item if you are using the USB in the system. You should disable this item if a higher-level controller is added.
  - **USB 2.0 Controller**
    Enable this item if you are using the EHCI (USB2.0) controller in the system.
  - **USB Keyboard Support**
    Enable this item if the system has a Universal Serial Bus (USB) controller, and you have a USB keyboard.
  - **AC'97 Audio**
    Use this item to enable or disable the onboard AC'97 Audio function.

Press <Esc> to return to the Integrated Peripherals page.

- **Super IO Device**

  Scroll to this item and press <Enter> to view the sub menu Super IO Device.


Phoenix - AwardBIOS CMOS Setup Utility
Super IO Device
POWER ON Function [BUTTON ONLY]
Onboard FDC Controller [Enabled]
Onboard Serial Port 1 [3F8/IRQ4]
Onboard Serial Port 2 [2F8/IRQ3]
Onboard Parallel Port [378/IRQ7]
Parallel Port Mode [SPP]
X EPP Mode Select EPP1.7
X ECP Mode Use DMA 3
PWRON After PWR-Fail [Former-Sts]
Item Help
Menu Level ►
:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5:Previous Values F7:Optimized Defaults

  - **POWER ON Function**
    This item provides several ways to power up the system: BUTTON ONLY, Keyboard 98, Password, Hot Key, Mouse Left, Mouse Right and Any Key.
  - **Onboard FDC Controller**
    Select Enabled, if your system has a floppy disk controller (FDC) installed on the system board and you want to use it. If you install and-in FDC or the system has no floppy drive, select Disabled in this field. Options: Enabled and Disabled.
  - **Onboard Serial Port 1 / 2**
    Select an address and corresponding interrupt for the serial port. Options: 3F8/IRQ4, 2E8/IRQ3, 3E8/IRQ4, 2F8/IRQ3, Disabled, Auto.
  - **Onboard Parallel Port**
    This item allows you to determine the I/O address for onboard parallel port. Options: 378H/IRQ7, 278H/IRQ5, 3BC/IRQ7 and Disabled.

- **Parallel Port Mode**
  Select an operating mode for the onboard parallel (printer) port. Select Normal unless your hardware and software require another mode in this field. Options: EPP1.9, ECP, SPP, ECPEPP1.7, EPP1.7.
- **EPP Mode Select**
  Select EPP port type 1.7 or 1.9.
- **ECP Mode Use DMA**
  Select a DMA channel for the parallel port while using the ECP mode.
- **PWRON After PWR-Fail**
  This item enables your computer to automatically restart or return to its operating status.

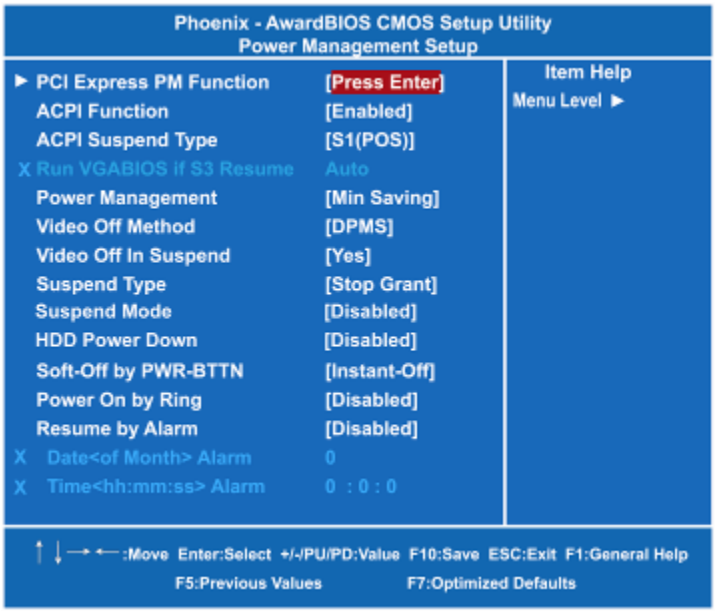
Press <Esc> to return to the Integrated Peripherals page.

- **Onboard Serial Port 3**
  This item assigns which I/O address to access onboard serial port 3.
- **Serial Port 3 Use IRQ**
  This item selects a corresponding interrupt for the third serial port.
- **Onboard Serial Port 4**
  This item assigns which I/O address to access onboard serial port 4.
- **Serial Port 4 Use IRQ**
  This item selects a corresponding interrupt for the fourth serial port.

Press <Esc> to return to the Main Menu page.

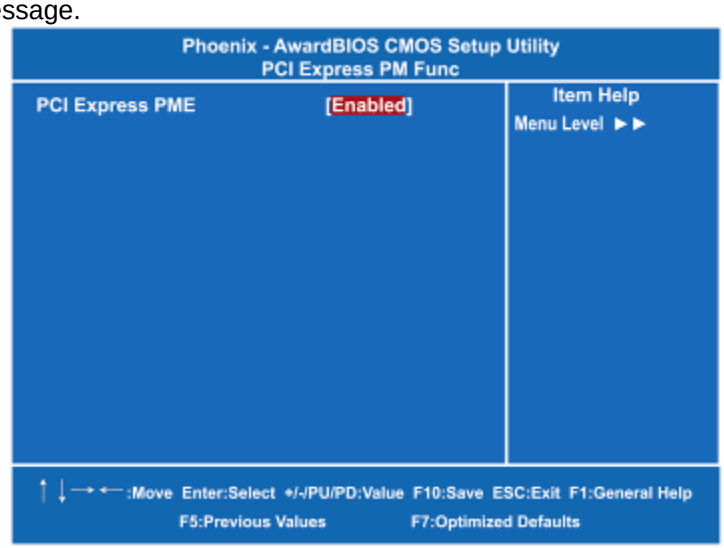
3.9 Power Management Setup

The Power Management Setup allows you to save energy of your system effectively. It will shut down the hard disk and turn OFF video display after a period of inactivity.


Phoenix - AwardBIOS CMOS Setup Utility
Power Management Setup
PCI Express PM Function [Press Enter]
ACPI Function [Enabled]
ACPI Suspend Type [S1(POS)]
X Run VGABIOS if S3 Resume Auto
Power Management [Min Saving]
Video Off Method [DPMS]
Video Off In Suspend [Yes]
Suspend Type [Stop Grant]
Suspend Mode [Disabled]
HDD Power Down [Disabled]
Soft-Off by PWR-BTTN [Instant-Off]
Power On by Ring [Disabled]
Resume by Alarm [Disabled]
X Date<of Month> Alarm 0
X Time<hh:mm:ss> Alarm 0 : 0 : 0
Item Help
Menu Level ►
↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5:Previous Values F7:Optimized Defaults

- **PCI Express PM Function.**

  Scroll to this item and press <Enter> to view the sub menu of PCI Express PM Function. Scroll to this item and press <Enter> to view the sub menu of PCI Express PM Function. PCI Express components are permitted to wakeup the system using a wakeup mechanism followed by a power management event (PME) Message.



  - **PCI Express PME**
    This option performs the same function as Wake-Up by PCI card, but is for PCIExpress cards. Options: "*Enabled*" and "*Disabled*".

Press <Esc> to return to the Power Management Setup page.

- **ACPI Function**
  This item allows you to enable/disable the Advanced Configuration and Power Management (ACPI). The function is always "*Enabled*".
- **ACPI Suspend Type**
  This item specifies the power saving modes for ACPI function. If your operating system supports ACPI, such as Windows 98SE, Windows ME and Windows 2000, you can choose to enter the Standby mode in S1 (POS) or S3 (STR) fashion through the setting

of this field. Options are:

[S1 (POS)] The S1 sleep mode is a low power state. In this state, no system context is lost (CPU or chipset) and hardware maintains all system contexts.

[S3 (STR)] The S3 sleep mode is a lower power state where the information of system configuration and open applications/files is saved to main memory that remains powered while most other hardware components turn off to save energy. The information stored in memory will be used to restore the system when a "wake up" event occurs.

- **Power Management**

  This option allows you to select the type (or degree) of power saving for Doze, Standby, and Suspend modes. The table below describes each power management mode:

Max Saving	It is maximum power savings, only available for SL CPUs. The inactivity period is 1 minute in each mode.
User Define	It sets each mode. Select time-out periods in the PM Timers section.
Min Saving	It is minimum power savings. The inactivity period is 1 hour in each mode (except the hard drive).
Disabled	Default value

- **Video Off Method**

  This setting determines the manner in which the monitor is blanked.

V/H SYNC+Blank	It turns OFF vertical and horizontal synchronization ports and writes blanks to the video buffer.
DPMS	Select this option if your monitor supports the Display Power Management Signaling (DPMS) standard of the Video Electronics Standards Association (VESA). Use the supplied software for your video subsystem to select video power management values.
Blank Screen	The System only writes blanks to the video buffer.

- **Video Off In Suspend**

  This item defines if the video is powered down when the system is put into suspend mode.

- **Suspend Type**

  If this item is set to the default Stop Grant, the CPU will go into Idle Mode during power saving mode.

- **Suspend Mode**

  After a selected period of system inactivity (1 minute to 1 hour), all devices except the CPU shut off. The default value is *"Disabled"*.

Disabled	The System will never enter the SUSPEND mode.
1/2/4/6/8/10/20/30/40 Min/1 Hr	It defines continuous idle time before the system entering the SUSPEND mode. If any item defined in (J) is enabled and active, the SUSPEND timer will be reloaded.

- **HDD Power Down**

  If HDD activity is not detected for a specified length of time in this field, the hard disk drive will be powered down while other devices remain active.

- **Soft-Off by PWR-BTTN**

  This option only works with systems using an ATX power supply. It also allows users to define which type of soft power OFF sequence the system will follow. The default value is *"Instant-Off"*.

Instant-Off	This option follows the conventional manner of system performance when turning the power to OFF. Instant-Off is a software power OFF sequence requiring the power supply button is switched to OFF.
Delay 4 Sec.	Upon the system's turning OFF through the power switch, this option will delay the complete system power OFF sequence approximately 4 seconds. Within this delay period, the system will temporarily enter into the Suspend Mode enabling you to restart the system at once.

- **Power On by Ring**

  This option allows the system to resume or wake up upon detecting any ring signals coming from an installed modem. The default value is *"Enabled"*.

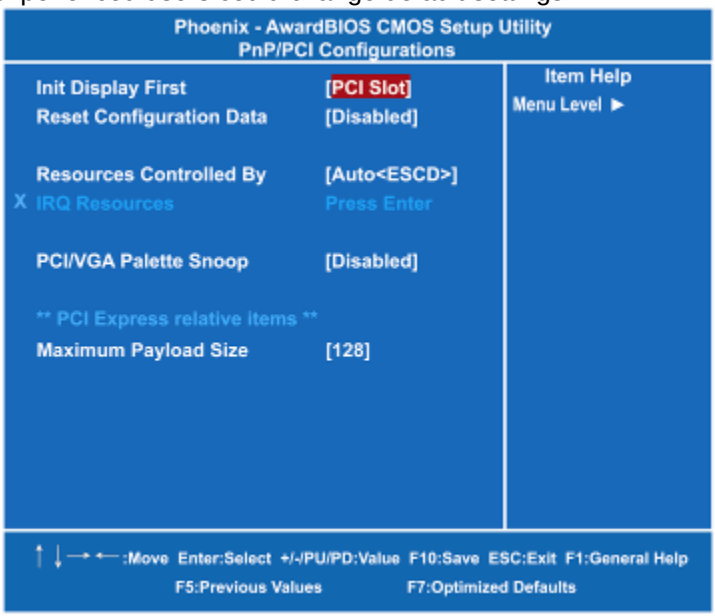
- **Resume by Alarm**

  If enable this item, the system can automatically resume after a fixed time in accordance with the system's RTC (realtime clock).

Press <Esc> to return to the Main Menu page.

3.10 PnP/PCI Configuration Setup

This section describes the configuration of PCI (Personal Computer Interconnect) bus system, which allows I/O devices to operate at speeds close to the CPU speed while communicating with other important components. This section covers very technical items that only experienced users could change default settings.


Phoenix - AwardBIOS CMOS Setup Utility
PnP/PCI Configurations
Item Help
Menu Level ►
Init Display First [PCI Slot]
Reset Configuration Data [Disabled]
Resources Controlled By [Auto<ESCD>]
X IRQ Resources Press Enter
PCI/VGA Palette Snoop [Disabled]
** PCI Express relative items **
Maximum Payload Size [128]
↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5:Previous Values F7:Optimized Defaults

- **Init Display First**
  This item allows you to decide whether PCI Slot or AGP to be the first primary display card.
- **Reset Configuration Data**
  Normally, you leave this item Disabled. Select Enabled to reset Extended System Configuration Data (ESCD) when you exit Setup or if installing a new add-on cause the system reconfiguration a serious conflict that the operating system can not boot. Options: Enabled, Disabled.
- **Resources Controlled By**
  The Award Plug and Play BIOS can automatically configure all boot and Plug and Play-compatible devices. If you select Auto, all interrupt request (IRQ), DMA assignment, and Used DMA fields

disappear, as the BIOS automatically assigns them. The default value is *"Manual"*.

- **IRQ Resources**
  When resources are controlled manually, assign each system interrupt to one of the following types in accordance with the type of devices using the interrupt:
  1. Legacy ISA Devices compliant with the original PC AT bus specification, requiring a specific interrupt (such as IRQ4 for serial port 1).
  2. PCI/ISA PnP Devices compliant with the Plug and Play standard, whether designed for PCI or ISA bus architecture.

  The default value is *"PCI/ISA PnP"*.

- **PCI/VGA Palette Snoop**
  Some non-standard VGA display cards may not show colors properly. This item allows you to set whether MPEG ISA/VESA VGA Cards can work with PCI/VGA or not. When enabled, a PCI/VGA can work with a MPEG ISA/VESA VGA card; when disabled, a PCI/VGA cannot work with a MPEG ISA/VESA Card.

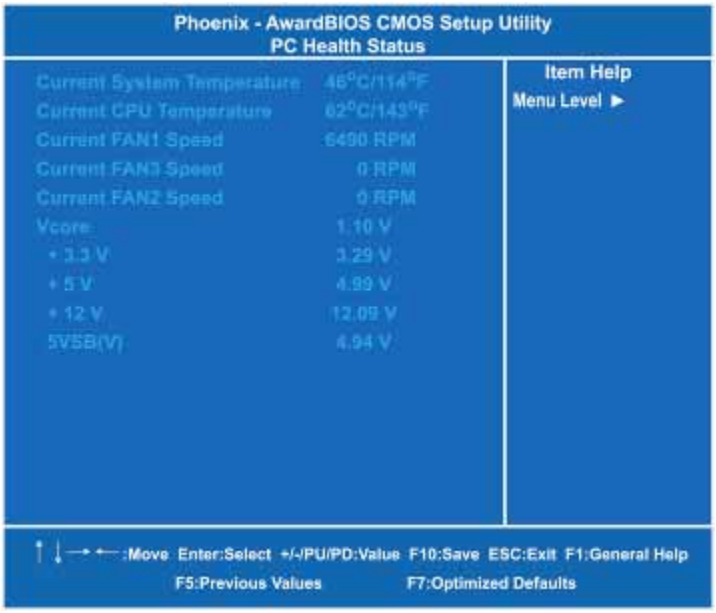
**** PCI Express relative items ****

- **Maximum Payload Size**
  When using DDR SDRAM and Buffer size selection, another consideration in designing a payload memory is the size of the buffer for data storage. Maximum Payload Size defines the maximum TLP (Transaction Layer Packet) data payload size for the device.

Press <Esc> to return to the Main Menu page.

3.11 PC Health Status

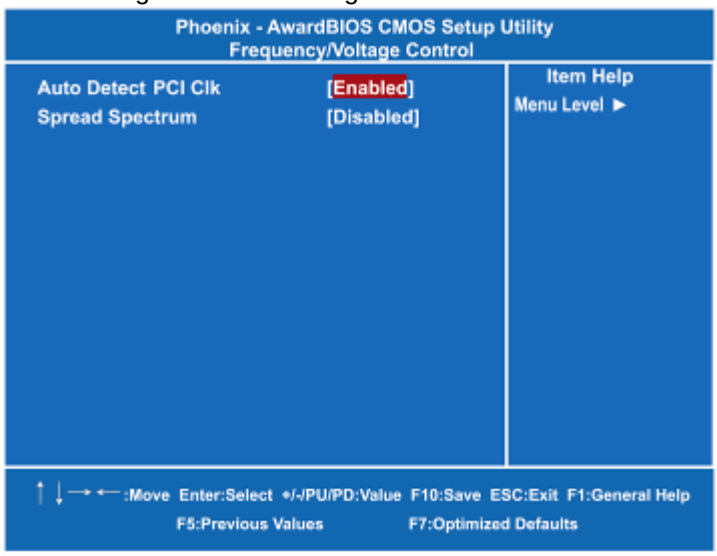
This section supports hardware monitoring that lets you monitor those parameters for critical voltages, temperatures and fan speed of the board.



- **Current System Temperature**
  Show you the current system temperature.
- **Current CPU Temperature**
  The current system CPU temperature will be automatically detected by the system.
- **Current FAN1 Speed**
  Show you the current system fan1 temperature.
- **Current FAN3 Speed**
  Show you the current system fan3 temperature.
- **Current FAN2 Speed**
  Show you the current system fan2 temperature.
- **Vcore +3.3V/+5V/+12V/VBAT(V)/5VSB**
  Show you the voltage of +3.3V/+5V/+12V.

3.12 Frequency/Voltage Control

This section is to control the CPU frequency and Supply Voltage, DIMM OverVoltage and AGP voltage.

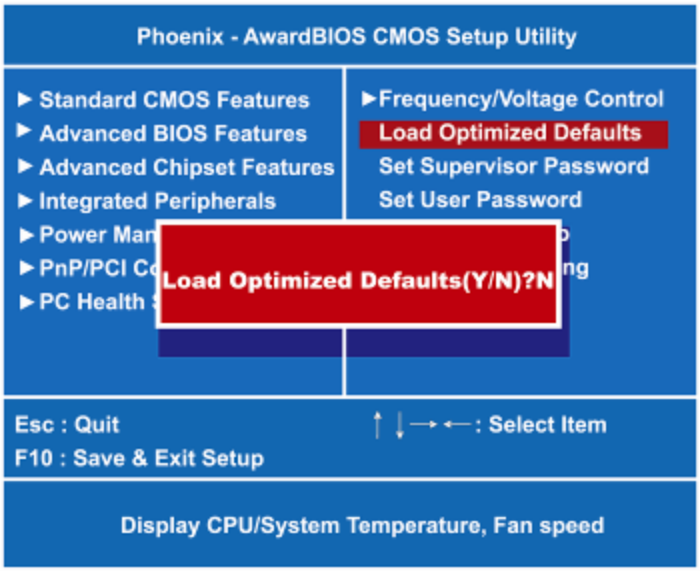


- **Auto Detect PCI Clk**
  The enabled item can automatically disable the clock source for a PCI slot without a module, to reduce EMI (ElectroMagnetic Interference).
- **Spread Spectrum**
  If spread spectrum is enabled, EMI (ElectroMagnetic Interference) generated by the system can be significantly reduced.

Press <Esc> to return to the Main Menu page.

3.13 Load Optimized Defaults

This option allows you to load your system configuration with default values. These default settings are optimized to enable high performance features.



To load CMOS SRAM with SETUP default values, please enter "Y". If not, please enter "N".

3.14 Set Supervisor/User Password

You can set a supervisor or user password, or both of them. The differences between them are:

1. **Supervisor password:** You can enter and change the options on the setup menu.
2. **User password:** You can just enter, but have no right to change the options on the setup menu.

When you select this function, the following message will appear at the center of the screen to assist you in creating a password.

ENTER PASSWORD

Type a maximum eight-character password, and press <Enter>. This typed password will clear previously entered password from the CMOS memory. You will be asked to confirm this password. Type this password again and press <Enter>. You may also press <Esc> to abort this selection and not enter a password.

To disable the password, just press <Enter> when you are prompted to enter a password. A message will confirm the password is getting disabled. Once the password is disabled, the system will boot and you can enter Setup freely.

PASSWORD DISABLED

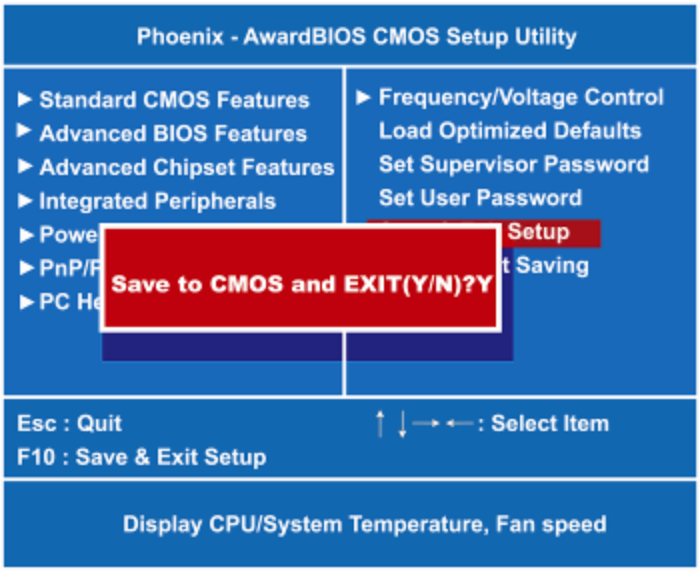
When a password is enabled, you have to type it every time you enter the Setup. It prevents any unauthorized persons from changing your system configuration.

Additionally, when a password is enabled, you can also require the BIOS to request a password every time the system reboots. This would prevent unauthorized use of your computer.

You decide when the password is required for the BIOS Features Setup Menu and its Security option. If the Security option is set to "System", the password is required during booting up and entry into the Setup; if it is set as "Setup", a prompt will only appear before entering the Setup.

3.15 Save & Exit Setup

This section allows you to determine whether or not to accept your modifications. Type "Y" to quit the setup utility and save all changes into the CMOS memory. Type "N" to bring you back to the Setup utility.



3.16 Exit Without Saving

Select this option to exit the Setup utility without saving changes you have made in this session. Type "Y", and it will quit the Setup utility without saving your modifications. Type "N" to return to the Setup utility.